

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
22 July 2004 (22.07.2004)

PCT

(10) International Publication Number
WO 2004/060169 A3

(51) International Patent Classification⁷: A61B 17/00, 17/064

(21) International Application Number: PCT/US2003/040812

(22) International Filing Date: 17 December 2003 (17.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 10/335,075 31 December 2002 (31.12.2002) US

(71) Applicant: INTEGRATED VASCULAR SYSTEMS, INC. [US/US]; 743 Pastoria Avenue, Sunnyvale, CA 94086-2918 (US).

(72) Inventors: CARLEY, Michael, T.; 1681 The Alameda, #28, San Jose, CA 95126 (US). GINN, Richard, S.; 297 Marti Way, San Jose, CA 95136 (US).

(74) Agents: GERIAK, James, W. et al.; ORRICK HERRINGTON & SUTCLIFFE LLP, 4 Park Plaza, Suite 1600, Irvine, CA 92614-2558 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

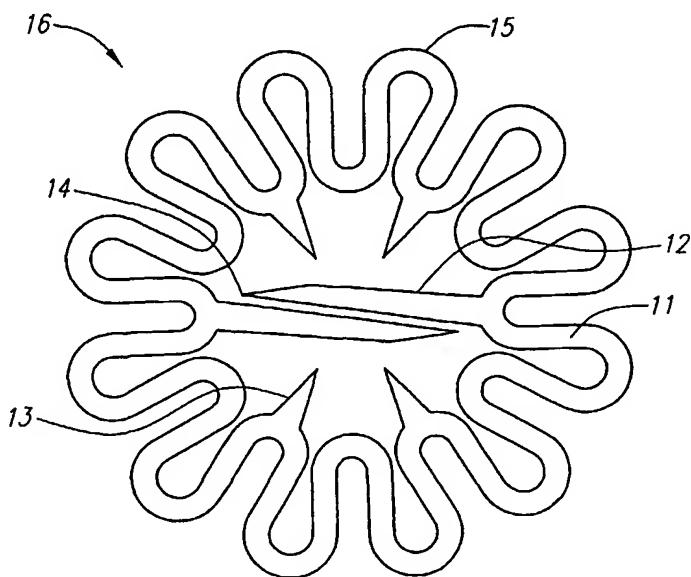
Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report: 10 September 2004

[Continued on next page]

(54) Title: METHODS FOR MANUFACTURING A CLIP AND CLIP



(57) Abstract: The present invention relates to a method of making clips which can be used to engage body tissue for the purpose of closing wounds. Such clips are generally annular in shape and have radially inwardly extending tines. The present invention first forms a precursor which, in one embodiment, has the tines extending radially outwardly from the annular body and then forms the clip by inverting the precursor such that the tines extend radially inwardly. In an alternate embodiment, the precursor is formed with an over-sized lateral dimension and then compressed inwardly to bring the tines closer together and to reduce the lateral dimension of the precursor. It is preferred to manufacture such clips from a superelastic alloy such as nickel-titanium, in which case the inverted or compressed precursor must be heated and quenched to heat set the clip in its final shape.

WO 2004/060169 A3



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 03/40812

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61B17/00 A61B17/064

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2002/188318 A1 (ALDRICH WILLIAM N ET AL) 12 December 2002 (2002-12-12) paragraph '0042!; figure 1a paragraph '0050! – paragraph '0056!; figures 2a-2c ----- US 2002/082641 A1 (ALDRICH WILLIAM N ET AL) 27 June 2002 (2002-06-27) paragraph '0040! – paragraph '0042!; figures 1a-1c paragraph '0050!; figure 6a paragraph '0069!; figure 12 ----- -/-	1-4, 7-10, 12, 14-16
A		1-3, 8-10, 14-16

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

23 July 2004

Date of mailing of the international search report

02/08/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL – 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax (+31-70) 340-3016

Authorized officer

Ducreau, F

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/40812

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR 2 722 975 A (DYNAMIQUE SANTE SARL) 2 February 1996 (1996-02-02) page 3, line 28 - page 4, line 9; figures 1-3 ----- US 4 665 906 A (JERVIS JAMES E) 19 May 1987 (1987-05-19) cited in the application the whole document ----- WO 00/56227 A (KEREN DVIR ; KILEMNIK IDO (IL); LOSHAKOVE AMIR (IL); BY PASS INC (US)) 28 September 2000 (2000-09-28) abstract; figure 1a -----	1,8, 14-16
A		1,8, 14-16
A		1,8, 14-16

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/40812

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 2002188318	A1	12-12-2002		US 2002082641 A1 WO 03071955 A2 US 2004039414 A1 US 2003195561 A1 US 2004009289 A1 US 2004010285 A1 US 2004108879 A1 US 2004073236 A1 AU 2018602 A CA 2431573 A1 EP 1339327 A2 JP 2004514529 T WO 0245593 A2		27-06-2002 04-09-2003 26-02-2004 16-10-2003 15-01-2004 15-01-2004 10-06-2004 15-04-2004 18-06-2002 13-06-2002 03-09-2003 20-05-2004 13-06-2002
US 2002082641	A1	27-06-2002		AU 2018602 A CA 2431573 A1 EP 1339327 A2 JP 2004514529 T WO 0245593 A2 US 2002188318 A1 US 2004039414 A1 US 2003195561 A1 US 2004009289 A1 US 2004010285 A1 US 2004108879 A1 US 2004073236 A1		18-06-2002 13-06-2002 03-09-2003 20-05-2004 13-06-2002 12-12-2002 26-02-2004 16-10-2003 15-01-2004 15-01-2004 10-06-2004 15-04-2004
FR 2722975	A	02-02-1996	FR	2722975 A1		02-02-1996
US 4665906	A	19-05-1987		US 6306141 B1 US 5190546 A US 5597378 A AT 48523 T CA 1246956 A1 DE 3480686 D1 EP 0145166 A2 JP 2543328 B2 JP 7067951 A JP 2715377 B2 JP 60100956 A US 5067957 A		23-10-2001 02-03-1993 28-01-1997 15-12-1989 20-12-1988 18-01-1990 19-06-1985 16-10-1996 14-03-1995 18-02-1998 04-06-1985 26-11-1991
WO 0056227	A	28-09-2000		AU 1583500 A AU 3313600 A AU 769269 B2 AU 3313800 A AU 7552500 A AU 7552700 A BR 0009172 A BR 0016247 A CA 2366708 A1 CA 2393486 A1 CA 2393508 A1 CN 1353594 T EP 1171044 A1 EP 1237485 A2 EP 1259169 A2 WO 0056227 A1		09-10-2000 09-10-2000 22-01-2004 09-10-2000 18-06-2001 18-06-2001 18-12-2001 27-08-2002 28-09-2000 14-06-2001 14-06-2001 12-06-2002 16-01-2002 11-09-2002 27-11-2002 28-09-2000

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/40812

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0056227	A	WO 0056228 A1	28-09-2000
		WO 0141623 A2	14-06-2001
		WO 0141624 A2	14-06-2001
		JP 2002538926 T	19-11-2002
		JP 2003515416 T	07-05-2003
		JP 2004513670 T	13-05-2004
		NZ 514745 A	29-08-2003
		US 2004073247 A1	15-04-2004
		AU 768923 B2	08-01-2004
		AU 1583100 A	09-10-2000
		AU 4056499 A	20-12-1999
		BR 9917217 A	26-02-2002
		CA 2366703 A1	28-09-2000
		CN 1352539 T	05-06-2002
		EP 1085837 A1	28-03-2001
		EP 1171042 A1	16-01-2002
		WO 0056226 A1	28-09-2000
		WO 0056223 A1	28-09-2000
		JP 2002538925 T	19-11-2002
		NZ 514744 A	30-01-2004
		NZ 529757 A	19-12-2003
		AU 768103 B2	04-12-2003
		AU 3953599 A	20-12-1999
		CA 2333010 A1	09-12-1999
		EP 1083835 A1	21-03-2001
		JP 2002516696 T	11-06-2002